# THE EXTENSION HORTICULTURIST

August 1, 1921.

Publicity backed by the goods wins every time. So long as southern sweet potatoes were handled in bags and dumped upon the market they brought low prices, in fact were considered very common food. Properly grown, graded and delivered in neat, classy hampers or crates sweet potatoes attract the attention of discriminating people and bring home the dollars every time.

Office of Horticultural and Pomological Investigations
and States Relations Service Cooperating
U. S. Department of Agriculture,
Washington, D. C.

# Sweet Potatoes in 1921

Grown in patches around negro cabins, in the gardens of plantation owners, on broad acres for feeding to livestock, millions of bushels of those good southern sweet potatoes, or yams as they have most commonly been called, have played an important part in the welfare of all our southern states. So little value has been placed upon this crop in the South that during past years millions of bushels of perfectly good sweet potatoes have rotted in the fields or in the storage pits. Cotton was king over all the Southland and what matter if ten, twenty, or even fifty millions of bushels of perfectly good sweet potatoes did decay and be forever lost. A few sections like the Eastern Shore of Virginia and south New Jersey, outside the domain of King Cotton, saw the opportunity and supplied the markets with thousands of carloads of "sweets" as they were called.

All the while no one thought of exploiting the southern sweet potatoes until Mr. Boll Weevil came along and almost pushed King Cotton's throne out from under him. Then came the introduction of simple methods of curing and storing sweet potatoes for shipment to northern markets. At present there are reported over 2,600 of these houses in operation.

Two outstanding things are needed to put the sweet potato industry on the map: First, standardization and second, exploitation or advertising in the northern consuming territory. The crop can be grown profitably in 24 states and for home use in about 7 others. Not all parts of any of these states are adapted to sweet potato production but enough to supply ten times the present demand.

The surest way to increase the demand for sweet potatoes is to give the people a standard article of excellent quality and make them want more of it. First of all the sweet potato industry must be standardized as to the varieties grown. The Jersey type of potato has its place in supplying the early market and in catering to a class of trade that demands that type of potato. It has been shown, however, that the southern or moist type of sweet potato is well received on the northern market by a considerable percentage of the people and that its popularity increases with its use. The great difficulty in the past has been the lack of standards as to varieties and the methods of grading and marketing. Two years ago the Southern Agricultural Workers in their annual meeting recommended that Nandy Hall, Porto Rico, Dooley, Triumph and Pumpkin constitute the leading varieties promoted for growing in the southern states. These varieties give a rather complete range of adaptability to soil, climate, marketing and other requirements. The main difficulty at present is to prevent local growers giving these varieties special names which are confusing to the trade. This office now has in press a very complete variety classification of sweet potatoes which we believe will, when published, clear up the whole matter so far as our agricultural workers and extension men are concerned but the difficulty will still remain of reaching and controlling the local growers. The U. S. Bureau of Markets in cooperation with several of the southern states has established tentative grades for sweet potatoes which, if followed, will give the trade

something definite to go by and will to a great measure standardize southern sweet potatoes on the northern markets.

The storage problem is being well handled in the majority of the southern states and it is our belief that if the storage houses now in existence and those being built are properly handled they will supply the markets with about as many cured sweet potatoes as can be handled for the present at least. There is need, however, for a vigorous campaign of education among the growers in order to get them to properly grow and especially to properly dig and handle the stock that is brought to these storage houses. The claims made by the advocates of the so-called patented houses, especially as regards the curing of frost-bitten potatoes, have been very damaging and have caused serious loss to storage men. It is essential that the potatoes be fully matured, dug during dry weather, properly graded, carefully handled so that they do not become bruised and that they are dug before being injured by frost. While we believe that the last word has not been said in the matter of storage house management and that there is yet need for a great amount of investigation, the fact remains that a large percentage of the houses constructed and handled according to government plans have proved reasonably effective and in many cases 100 per cent perfect in the results obtained.

It is definitely known that certain very important physiological changes take place in sweet potatoes during the curing and storage period. For example, the sugar content of certain varieties may be 1½ or 2 per cent when the potatoes are dug and 6 per cent or higher at the end of the curing period. This transformation of starch reaches its limit after a time, then a retroaction begins and the potatoes lose in sugar content toward the end of the storage period. Recent experiments made by the U. S. Bureau of Chemistry have demonstrated that by a special process of conversion and extraction, syrup to the amount of 33-1/3 per cent of the original weight of high sugar content sweet potatoes may be obtained. This work has reached the stage where it is ready for commercial adaptation.

Mr. B. A. Young of the Office of Seed and Plant Introduction has experimentally made a very fine product in the form of sweet potato chips. Mr. Young used a patent slicer which gives the thin slices a gridiron appearance like waffles. The slices are chilled for a short time in ice water, then fried in deep fat. The result is a most delicious sweet potato chip that if properly introduced would meet with a favorable reception on the market.

The canning of sweet potatoes is now an important industry but many problems relating to variety, stage of maturity or curing, canning methods, etc., remain to be worked out.

Seed selection, seed storage and plant production now require special attention on the part of the extension forces. During the past two years unscrupulous plant growers have gone far toward wrecking the commercial sweet potato industry of the South. Owing to the great demand for plants very little care has been exercised in the selection of stock to be planted. As a result inferior varieties have been disseminated and diseases have been spread broadcast through the sweet potato growing territory. If the industry is to properly develop, plant growers must be brought to a realization - by law, education or

otherwise, of their obligation to the growers and the public at large in the matter of supplying disease-free plants that are true to name. This is a work for the extension forces and the experiment stations but a reasonable amount of force and application of state laws will doubtless be necessary in order to get prompt results. The sweet potato industry of the South is as a whole in the development stage today and its future depends to a large degree upon securing the proper type of promotion.

Few people realize the possibilities of growing sweet potatoes for home use in sections of the country outside the recognized commercial producing territory. On sandy and well-drained, warm soils certain varieties of sweet potatoes such as Red Jersey, Yellow Jersey, Nancy Hall and Porto Rico, may be grown for home use as far north as southern New York, southern Michigan and Wisconsin, throughout the greater part of Iowa, Nebraska, and the lower elevations of Colorado, Utah, and Nevada. In these sections the plants must be started in the hotbed or greenhouse and given every possible advantage in order to mature potatoes of reasonable size and of good quality before the vines are killed in the autumn by frost. The quality will, of course, not be as good as of those grown in the southern states but the production of sweet potatoes for home use in these outlying districts is well worth a trial. The big problem, however, in the promotion of the sweet potato industry is to standardize the commercial crop of the South and make the northern people want it.

How to put it across from the extension standpoint is the question uppermost in the minds of state extension workers. It is safe to state that the methods used in one state will not always apply to another state but it can be set down as a universal principle that the work must be done through the cooperation of the county agent and the leading growers of each county. The following are the methods used by some of the state men who are making decided progress in extension work with sweet potatoes as a money crop.

Mr. C. H. Nissley, extension specialist in vegetable gardening for New Jersey, says in his report: "We have at the present time 8 sweet potato variety demonstrations, one demonstration to a county, in the southern counties of the state. The seed of these was originally secured from the Bureau of Plant Industry. These varieties are Nancy Hall, Porto Rico, Triumph, Dooley, Pumpkin, Big Stem Jersey and Yellow Jersey. In addition we have included two or three local varieties for which we have no name, also Red Jersey, Nansemond, General Grant and Vineless. In the majority of the demonstrations these varieties are showing up well and great interest is being shown in them due to the type of foliage and color of stems which some of them have.

Under disease control we have a project on the control of stem rot and black rot, this work being conducted by the Department of Plant Pathology. Disease control work is being carried on in all the sweet potato counties of South Jersey. Twenty to twenty-five growers in Atlantic County have made application to the State Department of Agriculture for seed certification work. I believe that this is the first work of its kind in the East.

Ten fertilizer demonstrations are under way in South Jersey. Under cultural methods demonstrations are being conducted in three systems of cultivation; the single hill system, ridge and level cultivation. These

demonstrations are put on to settle disputes relative to the cultural methods that would give the best yields. Another cultural demonstration is that of the method of applying the fertilizer. In one case all the fertilizer is applied under the row and in another a part of the fertilizer is reserved and used as a side-dressing when the vines have started to run.

One of the most important lines of sweet potato demonstration work, however, is that of growing good plants including the construction of permanent flue-heated hotbeds. Twenty-four sets of blue prints have been furnished growers for use in constructing these beds.

Last year we conducted field meetings to call the attention of the growers to the results obtained both with the varieties and the use of fertilizers. These demonstrations were attended by a large number of people most of whom are following the practices demonstrated the present year."

Mr. Nissley does not report upon the present condition of the New Jersey crop.

No direct report has been received from Maryland but a trip through the sweet potato growing section of the state shows a large acreage and that the potatoes are in a thrifty condition. The greater part of the Maryland crop is marketed direct from the field but last year several storage houses were built. At Hurlock, Md., two of these houses are located, one owned by the association and another by a local business man.

Mr. J. S. Gardner, assistant horticulturist in extension work in the University of Kentucky, says: "The extension work with sweet potatoes in Kentucky has been mainly along the line of emphasizing the importance of seed treatment to prevent black rot. Campaigns have been put on in six counties that are particularly well suited to the growing of sweet potatoes. The growing of sweet potatoes in Kentucky is being boomed with a view to giving the farmers something to grow in place of black tobacco. In Todd, Graves, Fulton and Henderson counties, the acreage this year has increased 300 to 400 per cent. In other counties the increase in acreage is not so great. In Graves county a sweet potato marketing association has been formed. Assistance is being given the growers in remodeling old buildings or the construction of new buildings for the storage of sweet potatoes. It is our plan to encourage the use of flue-heated hotbeds for growing plants next year."

From Missouri, we have a letter signed by Mr. Earl M. Page, extension specialist in horticulture, who states that there are three principal districts in the state where sweet potatoes are grown on an extensive commercial scale. These are Newton county in the southwest part of the state, St. Louis county around St. Louis, and the southeastern Missouri sandy lowlands.

Extension work with sweet potatoes in Missouri has consisted almost entirely of seed treatment, proper handling methods and the use of suitable varieties. The Nancy Hall is the leading variety although some other varieties find local preference. Seed treatment has greatly decreased the amount

of black rot in the commercial crop. Cooperative storage and marketing organizations are being promoted and we trust that by another year we may have several of these organizations in operation.

Mr. Claude Woolsey, extension horticulturist for Arkansas, says that the storage and marketing work for sweet potatoes in the state is handled by the state marketing organization but that he has demonstration work under way in the use of fertilizers, prevention of disease, seed selection and cultural methods. He also states that he is cooperating with the State Plant Board in their work of seed certification. The work is conducted entirely through the county agents.

Mr. Geo. P. Hoffman of South Carolina says: "I am enclosing a copy of our Bulletin No. 47 in which you will note our Growers' Agreement together with other information all of which shows our range of work and development. The following facts will be interesting.

In 1916 we had one standard sweet potato house and no selling methods. At present we have 114 successfully operated storage houses and a state sweet potato association. Production in the state has increased from five million to nine million bushels. We are now growing for the most part only two varieties, Porto Rico and Nancy Hall. Our storage house losses from rot are less than 2 per cent. Forty-three cars of South Carolina sweet potatoes were shipped out of the state last season, No. 1 stock averaging $1.24 per crate. Storage house prospects for this year will be double that of previous years."

The writer has visited the work being conducted by Mr. Hoffman and his associates in South Carolina and knows from observation and experience that Mr. Hoffman is putting over a good work. The fight is on in South Carolina between the extension forces and the promoters of the so-called patented storage houses. Thus far the extension forces have maintained the interests of the farmers and have largely prevented the introduction of costly and unnecessary systems of storage. Mr. Hoffman is working under a special project on sweet potatoes and sweet potato storage.

From Mr. Hull, sweet potato specialist of Louisiana, comes the following report: "For Louisiana I would like to report a prospective yield of sweet potatoes for 1921 of at least 10,000,000 bushels. This is a 25 per cent increase over last year and practically double the five year average. A greater number of storage houses will be built than ever before, in fact the storage house work is further advanced than in any previous year."

We have not received reports from Illinois, Indiana, Iowa and other states in which there are definite localities devoted to the growing of sweet potatoes. The acreage in most instances is greatly increased over last year and what is more important the growers are making special preparation for properly taking care of the crop. It is our belief that extension horticulturists in all of the commercial sweet potato producing states are justified

in emphasizing the importance of careful digging, handling and grading of the crop before it is put in storage. Many of the storage losses have been caused by the potatoes becoming frost-bitten before they are placed in the houses. No method of curing will undo the damage that is done by frost injury, and the only proper method is to dig just before the vines are killed by frost. I think everyone fully realizes the importance of careful grading and the proper handling of the potatoes to avoid bruising. I was more than surprised last season on a visit to the Eastern Shore of Virginia - that land of sweet potato fame - to see sweet potatoes being gathered up in rough splint baskets and carelessly dumped into barrels without as much as tipping the barrel on its side to ease the fall of the potatoes. It is needless to say that these potatoes on reaching the market showed bruising and many abrasions of the skin making them unsightly and bringing a lower price than if they had been properly handled.

No one can foresee the possibilities of the sweet potato industry but its future value as a commercial farm crop will depend upon the grade and quality of the goods that go upon the market. In my judgment, if we can secure the growing of the proper varieties and the right kind of grading and handling, little else matters. The public will demand more and more sweet potatoes.

* * * * * * * * * * * * * *

During the last half of June Prof. Close made a trip to Michigan, Illinois, Indiana and Ohio. In all of these states the spring frost injury to the prospective fruit crop has interfered with fruit extension work. In many apple orchards the crop was destroyed after the third spraying had been made.

Mr. T. A. Farrand began extension fruit work in Michigan on a half-time basis January 1st. He is a commercial fruit grower and is well acquainted with the problems confronting fruit growers in Michigan. His main lines of work this year are orchard fertilizers, cover crops and pruning. Next year spraying will also be pushed vigorously. Fertilizers are showing fine results on apples, peaches and cherries and also on raspberries and strawberries.

In Illinois, Prof. Brock emphasizes the reclaiming of old orchards, the planting of new ones, orchard fertilizers, apple blotch control and spray rings. One spray ring of 20 or more members with 3000 trees is very successful. Five of the members bought a power outfit mounted on a Ford truck and do all of the spraying and furnish spraying materials at a price of one dollar per tree for the season. They pay a young man $150.00 per month to run the spraying outfit. The profit this year will more than pay for the power sprayer. The spray ring work will be increased next year.

In Indiana the lines of work reported on previously are being pushed. Mr. Burkholder was booked for orchard tours in southern Indiana at the time of this visit so two days were spent with him there. A new idea advanced by Mr. Burkholder is "tree pruning tours". The plan is to start with a

group of men in one orchard, prune for an hour or more and then go on to other orchards so several orchards may be visited and trees of different types may be pruned.

The Smith-Hughes teachers in the county agricultural high schools are cooperating with Mr. Burkholder in fruit club work. Out of 70 of these teachers 20 are doing apple club work and 20 some other kind of fruit club work. A mimeographed circular of instructions for class exercises in pomology has been prepared as a guide and aid to these vocational teachers. The apple club circular has been revised.

A new bulletin on the beautifying of home grounds has been issued. It is well illustrated and well written and will be of great help to those who desire to plant trees, shrubs and flowers.

In Ohio a trip was made with Professors Cruickshank and Beach into the southeastern part of the state to see the development of the landscape planting work at various consolidated township high schools. Prof. Cruickshank drew the plans and gave planting instructions for all of these school yards. In nearly all instances the shrubs and trees have been well cared for and the improvement is a credit to all concerned. One result has been that many of the homes in these townships have been beautified by ornamental plantings. One farm home demonstration landscape planting was visited and it certainly was as well planned, executed and cared for as one could wish.

A few orchards were visited in which the perfect control of apple blotch by spraying and the return to profitable bearing by use of nitrogen has been demonstrated.

Beside the landscape work the other prominent lines are pruning, blotch control, scab control, use of fertilizers and orchard management. In March a circular on soil management and in June one on spraying were issued.

Messrs. Cruickshank and Beach have a very fine card index reference system by which the record of any piece of demonstration work can be referred to instantly.

W. R. Beattie, Extension Horticulturist

C. P. Close, Extension Pomologist